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1500 DESCRIPTION

1. This section is for all Town of Frederick construction projects. All landscaping for development projects and development review should refer to the Town of Frederick Land Use Code.

2. Order and furnish all labor, materials, supplies, tools and transportation and perform all operations in connection with and reasonably incidental to complete the installation of the landscaping and guarantee as shown on the drawings. The work shall include but not necessarily be limited to the following:

   a. Soil preparation

   b. Fine grading of all planting areas

   c. Protection of existing landscaped areas

   d. Seeding

   e. Sodding

   f. Planting, staking and guying

   g. Mulching

   h. Pre-inspection maintenance of installed work

   i. Clean-up, inspection and approval

   j. Guarantee of all work

1501 GENERAL PROVISIONS

Only qualified, well trained personnel shall be used to complete work and operate equipment. Where licenses or certifications are required, i.e. herbicide application, only those approved and licensed personnel shall be employed. The landscape crews shall be supervised by an on-site superintendent or foreman holding a Certified Landscape Technician (CLT) certificate as provide by the Associated Landscape Contractors of Colorado (ALCC).

1502 SUBMITTALS

All submittals shall be accepted by the Town Engineer in writing before any planting commences.

1502.01 Materials List

Submit a list of all materials to be used in the planting operations, together with the source of those materials. The list shall include plant materials, mulches, soil amendments, edgers, tree stakes and guys, etc.

1502.02 Descriptive Data

Submit catalog cuts, brochures, analyses of any manufactured items.

1502.03 Analytical Tests

Submit results of any analytical tests, performed by a certified soils laboratory, or suppliers certified analysis of materials with certified specification requirements. Analysis must be current, up-to-date and reliable as determined by the Town Engineer.

1502.04 Soil Test

1. Submit soil test analysis report for each sample of topsoil and planting mix from a soil testing laboratory approved by the Town Engineer.

2. Provide a particle size analysis, including the following gradient of mineral content:

Table - 1500-01 - Class of Pipe
USDA Designation
Gravel
Very Coarse Sand
Coarse Sand
Medium Sand
Fine Sand
Very Fine Sand
Silt
Clay

3. Provide a chemical analysis, including the following:

   a. pH and buffer pH

   b. Percentage of organic content by oven-dried weight.

   c. Nutrient levels by parts per million, including phosphorus, potassium magnesium, manganese, iron, zinc, and calcium. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil based on the requirements of horticultural plants.

d. Soluble salt by electrical conductivity of a 1:2, soil: water, sample measured in millimho per cm.

e. Cation exchange capacity (CEC).

1502.05 Soil Amendment Humus Test

Submit the manufacturer's particle size analysis, salt analysis and the pH analysis and provide a description and source location for the content material of all soil amendment humus materials.

1503 MATERIALS

1503.01 Sod

1. All sod for sod areas shall be a blended mixture of four (4) improved bluegrass varieties:

   a. 25% SR2100

   b. 25% Freedom 2

   c. 25% New Glade

   d. 25% Award

2. Sod available from Green Hills Sod Farm, 1283 Weld County Road 38, Berthoud, Colorado 80513, 970-535-4317. Similar sod acceptable if source and mixture blend is made known and approved prior to laying. The Contractor will furnish written proof by certificate of sod variety to Town Engineer. Sod must be tested by the Colorado State Laboratory or a certified laboratory at the Contractor's expense, if requested by the Town Engineer.

3. Sod shall be healthy, field grown, free of weeds and insects, and without undesirable debris such as stones, twigs, excess grass clippings, etc.

4. Cut root zone at a uniform thickness of 3/4-inch to 1-inch. Town Engineer has the option of inspecting and approving sod at growing source.

5. Immediately prior to cutting and lifting, all sod shall have been mowed to a height of 2 to 2-1/2-inches. During growth and culture, sod shall have been mowed, watered, fertilized, sprayed for weeds, and otherwise regularly maintained to produce a healthy, vigorous turf, free of undesirable weeds or grasses.

6. Deliver to the site within 24-hours of cutting in trucks with protective coverings to prevent drying and exposure. Limit daily deliveries of sod which can be laid within 48-hours of delivery time. Care will be exercised at all times to retain the native soil

on the sod roots during transportation, handling and planting. Dumping sod from vehicles will not be permitted.

7. During delivery and while in stacks, all sod will be kept moist and protected from exposure to the wind, sun and freezing. All damaged or dry sod will be rejected.

1503.02 Top Soil

1. Imported Topsoil:

   Top soil shall be loamy, friable soil, containing a minimum of 1.5% by dry weight organic matter; free from: subsoil, refuse, roots, heavy or stiff clay, stones larger than 1-inch, noxious seeds, sticks, brush, litter, and other deleterious substances including soluble natural salts. It shall be suitable for the germination of seeds and the support of vegetative growth. The pH value shall be between 6.5 and 8.0.

   Provide a minimum of one soil sample with the accompanying soil test report per 250-cubic yards of material required from samples obtained randomly throughout the source field location or stockpile.

2. Existing Topsoil:

   Existing topsoil may be used if it meets the requirements for imported topsoil or if approved by Town Engineer. Provide a minimum of one soil sample with accompanying soil test report for each topsoil type found at the site. Following the completion of the soil testing, the Contractor and Town Engineer shall meet at the site prior to beginning of topsoil stripping and establish the limitations of areas where existing topsoil may be used and the depth of topsoil stripping permitted.

   (NOTE: The Town Engineer may test the existing soil prior to bidding any projects and include the areas and depths of topsoil availability in the bid documents along with the soil test results.)

1503.03 Soil Amendments

Soil amendment humus shall be Aspen Rich Compost as supplied by Jensen Sales Company, Littleton, Colorado or A-1 Compost, Eaton, Colorado or BOSS Compost, Denver, Colorado. Submit analysis as required by Section 1503.5, Soil Amendment Humus Test.

1503.04 Fertilizer

1. Soil Preparation Fertilizer:

   Diammonium phosphate, soluble mixture in granular form of treated minerals with 18% nitrogen and 46% minimum available phosphoric acid (18-46-0).

2. Sod/Seed Fertilizer:

   Inorganic base (20-10-5) analysis with 2% iron and 8% sulfur. Submit manufacturer's guaranteed analysis as required in Section 1603, Submittals.

1503.05 Mulches

1. Wood Cellulose Mulch:

   Wood fiber mulch for seeded areas dyed green for visual metering, 12% maximum water content, 1-1/2 to 2-pounds weight per cubic foot, pH 4.5 to 7.0, Conwed “HydroMulch 2000 Fiber” with tacifier, straw, or approved equal.

2. Shredded Wood Mulch (Aspen Coarse):

   Natural tree mulch, shredded and mixed to create a blend of coarse, fibrous material that will intertwine and mat when placed. Equal to ‘Aspen Coarse’ mulch supplied by Jensen Sales Company.

1503.06 Decorative Cobble and Gravel

1. Cobble:

   Native stream cobble, 4 to 8-inch diameter, round oval shape, tan/gray shades, less than 15% fractured or not entire.

2. Washed River Gravel:

   Native river gravel, 1-1/2-inch diameter, generally rounded-oval with no more than 20% fracture. Supply from one source only.

1503.07 Grass Seed Mix

1. Seed for grass shall be fresh, clean, new crop seed composed of the varieties as specified, testing weeds as specified, and applied at the rate shown. Provide premixed and bagged with required contents tags. Seed shall have been tested for purity, germination and freedom from weeds within 6-months of the date of the contract. All seed shall be free of Poa annua, noxious weeds and shall not exceed 0.1% crop seed. Unless otherwise directed by Town Engineer, seed germination shall equal or exceed 90% and a purity of 85%. Poundage rates are given in bulk pounds. Obtain from Arkansas Valley Seed, Inc. or Pawnee Butes Seed Company.

2. All seed to be mixed by the wholesale dealer. The seed shall be mixed in the proportions necessary to obtain the application rate specified. The Contractor shall furnish the dealer’s guaranteed statement of composition of mixture, percentage of

purity, germination and maximum weeds for each seed mix to Town Engineer upon delivery of the seed mixture to the site and prior to application.

3. Light – Medium Use:

   a. Wear-n-Tear #450564.50

   b. 40% Bonanza II Tall Fescue

   c. 40% Crewcut Tall Fescue

   d. 10% Blue Chip Kentucky Blue

   e. 10% Omni Perennial Rye

   f. Seed rate: 220-260 bulk pounds/acre by volume (5.5 to 6-pounds per 1000-square feet). If hand broadcast, seeding rate is doubled.

4. Medium – Heavy Use:

   a. ProSports Turf #450495.50

   b. 25% SR2100 Kentucky Bluegrass

   c. 25% Arcadia

   d. 25% SR4200 Perennial Rye Grass

   e. 25% Manhattan III Perennial Rye Grass

   f. Seed rate: 175 bulk pounds/acre by volume (4-pounds per 1000-square feet).

      If hand broadcast, seeding rate is doubled.

5. Colorado Native (Non-Irrigated):

   a. 30% Western Wheat Grass

   b. 25% Slender Wheat Grass

   c. 15% Blue Gramma

   d. 10% Buffalo Grass

   e. 10% Arizona Fescue

   f. 5% Canada Wild Rye Grass

   g. 5% Canby Blue Grass

h. Seed rate: 15 bulk pounds peracre by volume (1/3-pound per 1000 square feet).

If hand broadcast seeding: 40 bulk pounds per acre by volume (1-pound per 1,000-square feet)

6. Special Situation Seeding by permission of the Town Engineer only.

1503.08 Water

Contractor is responsible for coordination of his needs for water with Town Engineer. Contractor must arrange any pay for water. If fire hydrant is to be used, Contractor may be required to use a temporary meter. There may be a charge for this use. Contractor may be required to use his own portable water truck if Town Engineer's water source is not seasonably available. Water is expected to be supplied free of cost to the Town.

1503.09 Landscape Fabric

Spunbond type landscape fabric/weed barrier similar and equal to Landmaster, Duon, Mirafi 140, Typar, or Stabilenka T-80. Woven mesh or black polyethylene film materials are *not* acceptable.

1503.10 Steel Edging

Preformed steel edging with provided stakes, 1/8" x 4" "Prosteel" or "Ryerson," painted green with overlapping joint configuration.

1503.11 Material for Staking and Guying

1. Post Stakes:

T-type metal fence posts with bottom anchor plate intact, eight foot (8-foot height, painted green.

2. Staking Wire:

Annealed, galvanized iron or steel, 14-gauge wire. Provide 15-inch length of 1/2-inch diameter white PVC sleeve over all guying and staking wire.

3. Tree Collar:

Non-stretch fabric with brass grommets, Model #PS-1 as manufactured by Foresight Industries, Cheyenne, Wyoming or "Neptco" arbortape, white, 900-pound strength guying tape. Use collar size compatible with tree size and expected wind stress.

In lieu of Tree Collar and Staking Wire, use Tree Hugger as manufactured/distributed by SK Tree Products, LLC; 542 West Confluence Avenue;Salt Lake City, UT 84123; 801-891-4658; www.treehugger.com.

4. Tree Wrap:

   Use 4-inch wide layered horticultural tree wrap with interior layer of asphaltic material. Material shall be specifically manufactured as horticultural tree wrap.

5. Tree Mulch Mats:

   "Permascape" #10101 30-inch diameter manufactured fibrous, circular tree mulch mat from recycled rubber by Aquapore Moisture Systems, Inc.

6. Erosion Control Fabric:

   Jute mesh of open, uniform weave, single jute yarn, not to vary in thickness by more than one-half normal diameter. Weight per lineal yard 1.22-pounds (+/- 5%). Smolder resistant. 48-inches wide (+/-1-inch). Complete with #11-guage steel wire staples formed into 'u' shape, 6-inch long. Conforming to CDOT standard specifications.

1504 METHODS

1504.01 Planting Time and Completion

1. All balled and burlapped trees are to be dug during an appropriate time of year for optimum transplanting and survival.

2. Do not lay sod during periods of prolonged cold or heat as directed.

3. Plants shall be planted and turf seeded only when weather and soil conditions ideally permit and in accordance with locally accepted practice, as accepted by the Town Engineer, and within the requirements of the schedule.

4. Contractor assumes all responsibility for plant protection and planting at the proper time and conditions including unexpected influences from weather, i.e., winter kill, freeze damage, wind.

5. All required site preparation shall be completed prior to bringing plants, seed, sod, etc., to the site for installation. No storage of live material permitted on-site overnight unless given prior written approval by Town Engineer.

6. Do not seed when soil is less than ideal for seedbed preparation or wind displacement would occur during seeding operations.

7. Topsoil shall not be stripped, transported, or graded if moisture content exceeds field capacity or if the soil is frozen.

8. Topsoil stockpiles shall be protected from erosion and contamination.

9. Amendments required to be added, as indicated on the soil test report, shall be added by the Contractor at the time of soil preparation for sodding, seeding or planting.

1504.02 Site Preparation

1. General:

   All ground areas within the limits of planting shall be sodded, seeded, planted with trees or mulched with bark or gravel as indicated on the drawings and/or as specified herein.

2. Weed Control:

   If the area to be developed is undisturbed or infested with bindweed, Canadian thistle, undesirable, noxious weeds or plants, the vegetation will be destroyed by a chemical application of Round-Up or equivalent at a rate recommended on the chemical's label for controlling all existing vegetation.

3. Excess Excavation:

   Excess excavation may be wasted on-site, off-site, or in the planting area as directed by the Town Engineer at no cost. Excess excavation for off-site disposal is not expected.

4. Clearing:

   Prior to any soil preparation, all existing vegetation which might interfere with the specified soil preparation shall be mowed, grubbed, raked, and the debris removed from the site. Prior to or during grading or tillage operations, the ground surface shall be cleaned of materials that might hinder final operations.

5. Addition of Soil Amendments:

   If soil amendments are required as per soil test recommendations, they shall be tilled a minimum of 6 inches deep forming a homogenous uniform mix. Any sticks, stones or other debris brought to the surface during tilling that are 2-inches or more in any dimension shall be removed.

1504.03 Topsoil Spreading

1. Spread topsoil from on-site stripped pile or imported source over prepared grades free of ruts, holes, debris or other undesirable condition.

2. Spread topsoil to a depth of 6-inches over all areas to be seeded, sodded or otherwise planted. Grade to smooth surface ready for soil preparation.

1504.04 Soil Preparation

Soil preparation for all groundcover, sodded or seeded areas:

1. Rototill existing soil at required grades to a depth of 6-inches minimum in one direction using an approved rototiller. Areas adjacent to walks, structures, curbs, etc. where the use of large mechanical equipment is difficult shall be worked with smaller equipment or by hand.

2. Remove all rubble, stones, and extraneous material over 2-inches in diameter from the surface after each pass.

3. If soil amendments are required, spread fertilizer and soil amendment humus in quantities as dictated by the soils test, over the entire area to receive sod or seed and incorporate into the top 6-inches of soil by discing or rototilling thoroughly until a uniform mixture is obtained with no pockets of soil amendments remaining. Perform multiple passes at cross angles.

4. Fine grade to restore smooth, even finish grades and to insure positive surface drainage. Top of finish grade (sod or seed) shall be established as per Section 1504.5, Finish Grading. No planting or seeding shall take place until soil preparation and grade is accepted by the Town Engineer.

1504.05 Finish Grading

1. Finish grading shall be accomplished to within 1-inch of proposed elevations on any area of disturbed or fill soil. A smooth, compatible transition shall be produced between areas of undisturbed soil and the areas being finish graded. Debris shall be removed after final pass.

2. Blading, dragging, and soil cultivation techniques shall be used to produce a soil condition acceptable for sodding, seeding, ground cover beds, shrub areas, or mulched areas as shown on the plans. In sodding areas, the finish grade shall be held 1-1/2-inch below existing or proposed levels of sidewalks, curbs, sprinkler heads, etc. Seeded areas shall be held 1-inch below such elements, and mulched areas shall be held 1-inch greater than specified depth of the mulch.

3. Drainage swales, drain pipes, or other open sheet drainage areas requiring particularly accurate grades shall be staked by use of an instrument before construction to insure proper drainage.

4. Grassed swales shall be contained between 1-1/2 and 4% grades unless otherwise specified. Drainageways shall not contain any water holding depressions and shall have erosion control fabric as shown on the approved plans.

5. Mounds, terraces, or other earthforms shall be constructed to plans and/or instructions of the Town Engineer and shall be inspected and approved prior to finish

landscape treatment. Contractor shall use appropriate grading equipment to ensure detail undulation of earth forms as shown on plans or directed by the Town Engineer.

6. The Contractor shall prepare the site in an orderly condition free of all debris so that seeding, sodding, planting, and other construction operations may proceed immediately. All areas outside the contract limits that have been disturbed shall be restored to their original condition in accordance with procedures as described herein at Contractor's expense.

1504.06 Sodding

1. Lay sod on finish graded surface with tight joints and no overlap. Where applicable during hot weather conditions, lay according to complete irrigation zones in order to apply water as soon as possible. Lay perpendicular to slopes. Smooth any disturbed final grading and remove debris that may prohibit a smooth sod surface. Remove tree-watering berms as part of grading operation in irrigated turf area.

2. On slopes greater than 3:1 grade, provide staples, pins or cedar shingle stakes in all sodded areas in diamond pattern at three feet on center. Drive staking material flush to soil line of sod. On long slopes less than 3:1 grade, the Town Engineer may require staking.

3. Immediately upon laying sod and before watering, gentle tamp or roll the sod to tighten joints and level any minor unevenness. Use a light weight roller that will not displace sod or cause depressions. Do not roll soil if underlying surface is wet enough to depress or displace sod. Hand tamp in areas inaccessible to motorized, large equipment.

4. Water immediately after fertilizing to produce a soggy condition to all sodded areas. As a guide to sufficient watering, sod should depress 2-inches from foot traffic. Prohibit all traffic after watering. Coordinate irrigation system controller and/or other requirements for optimum continual watering which prevents sod from showing signs of stress.

5. Where directed by Town Engineer, provide traffic control barriers sufficient to prohibit foot traffic during establishment period.

1504.07 Seeding

1. Seed shall be spread at the rate specified in Section 1503.7, Grass Seed Mix, for the type of seed used when winds are calm, using a Brillion seeder or approved equivalent. If hydroseeding is used for seeding, seed shall be applied separately, not mixed in the mulch.

2. Do not use wet seed that is moldy or otherwise damaged in transit or storage.

3. Sow lawn grass seed using mechanical drill type (Brillion) seeding machine for slopes 4:1 and flatter and for slopes steeper than 4:1, sow seed with hydroseeder. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.

4. Sow native grass seed areas using hydraulic seeding equipment suited to conditions and capable of uniform sowing of seed and coverage of mulch.

5. For areas inaccessible to seeding machine or if its use is not required, rake seed lightly into top 1/4-inch of soil, roll lightly, and water with a fine spray. Cover with approximately 1/2-inch layer of peat mulch.

1504.08 Mulching Seeded Areas

1. Mulching of seed areas shall be accomplished immediately after seeding using an approved hydro-mulcher to apply wood cellulose fiber and mulch binder at rate of 2,000-pounds per acre or 46-pounds per 100-square feet.

2. Mulching shall not be done in the presence of free surface water resulting from rains, melting snow or other causes.

3. Areas not properly mulched, or damaged due to the Contractor's negligence, shall be repaired and the area remulched in an acceptable manner at the Contractor's expense. Mulch removed by wind prior to acceptance, shall be reestablished by the Contractor at his own expense.

4. Apply erosion control netting immediately after seeding and mulching. Do not complete seeding and mulching when erosion control operations cannot immediately follow.

1504.09 Erosion Control

1. Area to be Netted:

   Apply jute netting and/or mulch binder to areas which are vulnerable to soil erosion. Areas include 6-feet on both side of swales, and slope areas in excess of 2-1/2 :1. In addition, see plans for specifically indicated areas. If the Contractor fails to net such areas and soil erosion subsequently occurs, Contractor shall re-establish the finish grade, soil preparation, seed bed, and apply jute netting at his own expense.

2. Jute Netting:

   a. Roll out in place after seeding and mulching. Apply material loosely and smoothly to soil surface without stretching. Avoid walking directly on the seed bed either before or after the jute is applied.

b. Bury the up-channel end of each piece of jute netting in a narrow trench, 6-inches deep. After the jute is burried, tamp the trench firmly closed.

c. In cases where one roll of netting ends and a second roll is needed, overlap up-channel piece over the second roll by at least 18-inches. When two or more widths of netting are applied side by side, make an overlap of at least 6 inches.

d. Outside edges of Netting: Level to grade of seeded area at edges to allow for smooth entry of water.

e. Stapling: Staple overlaps which run parallel to the direction of the flow in channel bottoms on 2-foot intervals. Staple outside edges, centers and overlaps on banks on 2-foot intervals.

f. Each Width of Cloth: Install row of staples down the center as well as along each side.

g. Staple check slots and junctions of new rolls across the channel on 6-inch intervals.

h. On soft or sandy soil, or areas subject to wind blowout, apply staples in alternate diagonal position and space at fourteen inch (14-inch to eighteen inch (18-inch intervals.

1504.10 Transportation and Storage of Plant Material

1. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.

2. During transportation of plant material, the Contractor shall exercise care to prevent injury and drying out of the trees. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the Town Engineer may reject the injured tree(s) and order them replaced at no additional cost to the Town. All loads of plants shall be covered at all times with tarpaulin or canvas. Loads that are not protected will be rejected.

3. Plants must be protected at all times from sun or drying winds. Those that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet mulch, or other acceptable material, and kept well-watered. Plants shall not remain unplanted any longer than 3-days after delivery. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled with suitable support of the soil ball to avoid damage.

1504.11 Mechanized Tree Spade Requirements

Trees may be moved and planted with an approved mechanical tree spade. The tree spade shall move trees limited to the maximum size allowed for a similar B&B root-ball diameter

according to the *American Standard for Nursery Stock* and/or Colorado Nursery Act, or the manufacturer's maximum size recommendation for the tree spade being used, whichever is smaller. The machine shall be approved by the Town Engineer prior to use. Trees shall be planted at the designated locations in the manner shown in the plans and in accordance with applicable sections of the specifications.

1504.12 Tree and Shrub Planting

1. Establish Location:

   Stake or set out trees in locations shown on the plans for approval by Town Engineer. Locate and mark all subsurface utility lines. Approval of the Town Engineer is required before excavation begins.

2. Planting Pits:

   a. Tree, shrub, and groundcover beds are to be excavated to the depth and widths indicated on the drawings. If the planting area under any tree is initially dug too deep, the soil added to bring it up to the correct level should be thoroughly tamped.

   b. The bottom of all beds shall slope parallel to the proposed grades or toward any subsurface drain lines within the planting bed. The bottom of the planting bed directly under any tree shall be horizontal such that the tree sits plumb.

   c. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not excavate compacted subgrades of adjacent pavement or structures.

   d. Subgrade soils shall be separated from the topsoil, removed from the area, and not used as backfill in any planted or lawn area. Excavations shall not be left uncovered or unprotected overnight.

   e. For trees and shrubs planted in individual holes in areas of good soil that is to remain in place and/or to receive amendment in the 6-inch layer, excavate the hole to the depth of the root ball and to widths shown on the drawing.

   f. The sides of the holes shall be roughened to remove any compacting or “glazing” caused by the digging operation. The bottom of the hole shall be loosened to the minimum depth of 6-inches. Mix loosened soil to blend soil types and compact prior to planting to prevent settling after planting.

   g. If areas of soil with poor internal drainage are encountered as determined by Town Engineer’s representative, over-excavate hole's perimeter ring by 50% to allow full pit water drainage within a 24-hour period. Notify Town Engineer’s representative and receive acceptance before over-excavating.

h. On steep slopes, the depth of the excavation shall be measured at the center of the hole and the excavation dug as shown on the drawings.

3. Obstructions:

If rock, underground construction work, utilities, tree roots, or other obstructions are encountered in the excavation of planting areas, alternate locations for any planting shall be determined by the Town Engineer.

4. Backfill Material:

Tree planting pits shall be backfilled with the following mix:

a. 65% topsoil by volume; soil may be taken from the plant pit or imported soil of a quality acceptable by the Town Engineer meeting or exceeding the quality of specified topsoil. Only imported topsoil shall be used.

b. 35% soil amendment humus by volume.

c. The specified backfill materials shall be evenly pre-mixed using appropriate equipment, then turned to produce a uniform, evenly blended consistency, free of all pockets of unblended material and any clods or stones greater than 2-inch in diameter. Backfill mix shall be delivered to each planting pit after mixing has occurred. Pre-mixed backfill mix shall be inspected and approved prior to use.

d. Mix and store pre-mixed planting backfill materials in separate area on-site or import ready-mixed material.

1504.13 Planting Operations

1. Plants shall be set on flat-tamped or unexcavated pads at the same relationship to finished grade as they were to the ground from which they were dug, unless otherwise noted on the drawings. Plants must be set plumb and braced in position until topsoil or planting mix has been placed and tamped around the base of the root ball. Improper compacting of the soil around the root ball may result in the tree settling or leaning. Plants shall be set so that they will be at the same depth and so that the root ball does not shift or move laterally one year later.

2. Proper planting depth requires the root flare to be at or slightly above the finished grade. It is important to determine how deep the root flare is in the ball before it is placed in the planting hole. Sometimes the top of the ball may need to be raised until the root flare is at the proper planting depth and/or soil must be removed from the top of the ball.

3. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.

4. If the root flare is less than 2-inch below the soil level of the root ball, plant the tree at the appropriate level above the grade to set the flare even with the grade. If the flare is more than 2-inch at the center of the root ball the tree shall be rejected.

5. Lift plants only from the bottom of the root balls or with belts or lifting harnesses of sufficient width not to damage the root balls. Do not lift trees by their trunk or use the trunk as a lever in positioning or moving the tree in the planting area.

6. Remove plastic, paper, or fiber pots from containerized plant material. No plant shall be planted in any partial or complete container. Pull roots out of the root mat, and cut circling roots with a sharp knife. Loosen the potting medium and shake away from the root mat. Immediately after removing the container, install the plant such that the roots do not dry out. Pack planting mix around the exposed roots while planting.

7. Cut ropes or strings from the top of shrub root balls and trees after plant has been set. Remove burlap or cloth wrapping from around top half of balls. Do not turn under and bury portions of burlap at top of ball. Completely remove any waterproof or water-repellant strings or wrappings from the root ball and trunk before backfilling.

8. Remove all wire baskets. Remove the bottom of the basket first and set the plant in the plant pit. Once plant is adjusted properly in plant pit, remove sides of wire basket.

9. Set balled and burlapped trees in the hole with the north marker facing north unless otherwise approved by the Town Engineer. Containerized material may not have a north orientation due to movement during the production process.

10. Place native soil, topsoil, or planting mix into the area around the tree, tamping lightly to reduce settlement.

11. For plants planted in individual holes in existing soil, add any required soil amendments to the soils, as the material is being backfilled around the plant. Ensure that the amendments are thoroughly mixed into the backfill.

12. For plants planted in large beds of prepared soil, add soil amendments during the soil installation process.

13. Ensure that the backfill immediately around the base of the root ball is tamped with foot pressure sufficient to prevent the root ball from shifting or leaning.

14. Thoroughly water all plants immediately after planting. Apply water by hose directly to the root ball and the adjacent soil.

15. Remove all tags, labels, strings, etc. from all plants.

16. Remove any excess soil, debris, and planting material from the job site at the end of each workday.

17. Form watering saucers 4-inch high immediately outside the area of the root ball of each tree as indicated on the drawings.

1504.14 Mulching Trees and Shrubs

1. Install specified mulch in all shrub beds, ground cover areas and around trees. Install mulch over smooth soil surface and up to base of plants and to containment paving and/or edging, 4-inch depth for mulch in shrub beds, 3-inch depth for organic mulch in ground cover areas. Use no underlayer of landscape fabric in ground cover areas or for individual trees in turf areas.

2. Keep mulch applications even; with smooth, level surface without voids. Place under shrub branches to trunk area. Do not cover runners of ground covers.

3. Provide mulched saucer for water retention in dryland areas. In irrigated turf area, mulch using steel edging for containment or concrete mulch containment curb or use mulch mat as specified.

4. Mulch Mat:

   Install even with turf grades over smooth soil surface. Pin down with 12-inch steel edging staples four (4) per edge, two (2) per radius out. Cut out for trunk diameter as needed.

5. Edging Installation:

   Install at grade to lines as shown on plans. Provide stakes for every preformed slot, anchor securely. Lower bed grade to bottom of edging and slope back for 2-feet to accommodate level of mulch.

1504.15 Staking

Stake trees in a true vertical position per the appropriate construction detail. Drive stakes plumb to equal elevations. Stakes and guys shall be installed immediately upon approval of planting, and shall be removed at the beginning of the second growing season.

1504.16 Wrapping

Wrapping material shall be applied from the base of the tree to the first branch. All wrapping material shall be applied only in the fall and removed no later than May 15th or as specified by the Town Engineer.

1504.17 Pruning

1. Plants shall not be heavily pruned at the time of planting. Pruning is required at planting time to correct defects in the tree structure, including removal of injured branches, double leaders, waterspouts, suckers, and interfering branches. Healthy

lower branches and interior small twigs should not be removed except as necessary to clear walks and roads. In no case should more than one-quarter of the branching structure be removed. Retain the normal or natural shape of the plant.

2. All pruning shall be completed using clean, sharp tools. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears.

3. Except in circumstances dictated by the needs of specific pruning practices, tree paint shall not be used. The use of tree paint shall be only upon approval of the Town Engineer. Tree paint, when required, shall be paint specifically formulated and manufacturing for horticultural use.

4. Pruning of large trees shall be done from a hydraulic man-lift such that it is not necessary to climb the tree.

1504.18 Cleanup

Clean the entire site of any construction debris, pruned material, excess material, weeds, etc., as a last operation. Broom clean is acceptable procedure, unless directed by the Town Engineer.

1505 MAINTENANCE

1505.01 Seeded/Sodded Area Maintenance

Contractor is required to maintain all sodded/seeded areas until Initial Acceptance. Prior to Initial Acceptance all irrigated seeded areas shall be maintained with at least the following operations: water and adjust irrigation system for ideal seedbed moisture where seedbed is irrigated. Repair any erosion damage including seeding and mulching. Control weeds by mechanical or herbicide application methods. Remove debris. Maintain access barriers. Correct any site condition which may adversely impact the seeded area. Reseed and mulch all areas greater than 1-square foot which show no sign of germinating seedlings 3-weeks after sowing. Maintain any specified temporary irrigation systems.

1505.02 Maintenance of Trees, Shrubs and Groundcovers

1. Maintenance shall begin immediately after each plant is planted and continue until its acceptance has been confirmed by the Town Engineer.

2. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, mulch adjustment and refurbishing, tightening and repairing guys and stakes, resetting plants to proper grades or upright position, restoring of the planting saucer, and furnishing and applying such sprays or other materials as necessary to keep plantings free of insects and diseases and in vigorous condition.

3. Planting areas and plants shall be protected at all times against trespassing and damage of all kinds for the duration of the maintenance period. If a plant becomes

damaged or injured, it shall be treated or replaced as directed by the Town Planning Department at no additional cost.

1505.03 Watering

1. Contractor shall irrigate as required to maintain vigorous and healthy tree growth. Overwatering or flooding shall not be allowed. The Contractor shall monitor, adjust, and use existing irrigation facilities, if available, and furnish any additional material, equipment, or water to ensure adequate irrigation. Root balls of all trees and large shrubs shall be spot watered using handheld hoses during the first four months after planting, as required to ensure adequate water within the root ball. Winter watering is the responsibility of the Contractor for all guaranteed planting.

2. During periods of restricted water usage, all governmental regulations (permanent and temporary) shall be followed. The Contractor may have to transport water from ponds or other sources, at no additional expense to the owner when irrigation systems are unavailable.